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ABSTRACT

A study investigated teachers' experiences of educational and cultural change in adult education institutions. The initial assumption of the study was that the institutional shift from traditional teacher-dominated, face-to-face teaching to networked teamwork that emphasizes students' independence is not only a methodological or technological change, but also a cultural one. It affects and depends on the whole institution and requires a multi-level transformation of the practices and procedures, as well as overall changes in the thinking of teaching, learning, and studying. The study was empirical and applied mainly qualitative methodology. However, surveys were also used and data were gathered through interviews and a short questionnaire delivered to all potential respondents via e-mail. The subjects were 60 teachers in 15 different vocational programs representing 20 adult vocational institutions. Results showed that all institutions were in the middle or beginning of the process of changing teaching practices and linking them into instructional technology and the information age. The subjects described difficulties in transforming instruction from traditional classroom teaching into multi-media instruction in which distance education and independent work are crucial parts of studying and teaching. Teachers' and students' roles and power balance resulting from the students' independence in goal setting and individual curriculum were also in flux. This kind of change seemed to be a major challenge to the teachers' professional identity and previous conceptions of learning and teaching. Implications for educational institutions include deciding how to support the new technology while adopting a new learning and teaching culture. (Contains 21 references.) (KC)

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Modern Media and Instructional Technology in Vocational Education: Some Experiences of the Diffusion of New Technology in the Adult Education Institutions

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Introduction and the problem

The study belongs to the government supported 'Finland Towards an Information Society' (Suomi tietoyhteiskunnaksi) research and development program. One part of the program is to enhance the development and implementation of modern instructional technology in adult vocational education. The This includes both research and development and it is funded and administered by the National Board of Education in Finland.

There were three basic premisesses motivating the study. First, there seems to be a hectic invasion towards the idea of information society (see Castells 1996). This trend is global, although the major leaps are made within the western countries. Second trend is the change in organizations cultures towards more transient, lean and flexible project organization dealing increasingly with information (Buchholtz & Roth 1987, Lash & Urry 1994). Third transition process is related to the prospects and limitations of new learning environments emerging both from new ideas in understanding and constructing curricula (e.g. Pinar et al. 1995, Moore & Kearsley 1996) and the pressures of rapidly developing information technology also in education (Kincheloe 1995).

Technology has become an essential part of our daily life despite the fact that the technology itself has a double role. It is both a risk and an option in the sense of threatening to deskill people and forcing them to become learners, and being a helper and a tool in routine and sometimes more complicated tasks (see Castells 1996).

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Educational institutions are currently confronting the pressures of change in the information technology context. The existing organization culture and particularly the educational practices applied are being challenged by the ideas and products of the information society.

One major advantage of new (virtual) learning environments is that they offer an access to studying without the limitations of time and space (Giddens 1991). Students are no longer tied to the time of instruction or the physical context where it takes place. This may increase an individual's interest in studying and foster self-directed, autonomous studying which can act like a catalyst in enhancing learning processes in directing to construction of meaningful knowledge structures.

From a more critical perspective we may argue that current learning environments are not yet virtual enough. Information technology is rapidly developing software and equipment for wireless communications, particularly for accessing world wide web and other internet applications. In educational thinking we have proceeded from computer–based training towards network based learning and networked multimedia learning systems.

The purpose of this study, belonging to the so-called OpinNet project, was to investigate the teachers' experiences of educational and cultural change in the adult education institutions. Our initial assumption was that the institutional shift from traditional teacher dominated, face-to-face teaching to networked team-work, emphasing students' independence is not only a methodological or technological change, but also a cultural one (see e.g. Adler 1990, Kasvio 1994). It affects and depends on the whole institution and requires a multi-level transformation of the practices and procedures as well as overall changes in the thinking of teaching, learning and studying. The change required can be described as a paradigmatic one leading into qualitative shifts in the ways of teaching, learning and studying and the practices, such as assessment and evaluation, connected with those. Because of the major transformation needed, it is obvious that changes in the teaching culture will be slow and gradual (Rogers & Shoemaker 1971). We specified the research question to study teachers' experiences of modern instructional technology in adult vocational teaching and students' studying.

We describe first the methodology and the results. The rest of the paper discusses the implications of the empirical results particularly from the point of the cultural change at the institutional level. We will also discuss the recommendations dealing with the future development of vocational education and possibilities of enhancing the institutional transformation into the age of information society.

Methodology

The study was empirical and applied mainly qualitative methodology. However, survey method was also used. The data were gathered with interviews and a short questionnaire delivered to all potential respondents via email. The subjects were teachers in 15 different vocational programs representing about 20 adult vocational institutions. All subjects (n= 160) were asked to respond to a questionnaire that was used to select ten subjects for a thematically structured interview. The selection of interviewees was based on the strategy of maximizing the differences between the responses.

Results

The question of power and teachers' new role

The results overall showed that all institutions were in the middle or beginning of the process of changing teaching practices and linking them into the IT and the information age. The subjects described difficulties in transforming instruction from traditional classroom teaching into multi-media instruction in which the distance education and independent work are crucial parts of studying and teaching. Teachers' and students' roles and power balance due to the students' independence in goal setting and individual curriculum were also seeking new directions. This kind of change seemed to be a major challenge to the teachers' professional identity and previous conceptions of learning and teaching. The teaching culture seemed to struggle with the idea of changing practices from knowledge transmitting to 'midwifering' learning.

The double role of Instructional technology

The results of the empirical study suggest that modern instructional technology changes a teacher's identity and role both as a teacher and a member of the organization. New technology seems to direct teachers to act more as facilitators of learning or a developer of meaningful learning situations than being in a traditional role of transmitting knowledge with direct teaching. Concerning the traditional organizational role of the teachers there seems to be increasing number of other obligations for teachers than instruction in a vocational institution. More than 2/3 of

the subjects responded having a myriad other things to do, such as development and planning assignments, consultation, and memberships in different projects and boards.

The teacher is also in a key role when assessing the success of new innovations, for instance, application of specific technology or new learning environments. This seemed to create pressures for teachers to be active in adopting the technology. Quite often this pressure was so intensive that teachers got an impression of being forced to be active partners in applying new technology. However, in most cases the teachers were motivated in being involved in the development.

According to the results the organizations seemed to have poor or fairly poor opportunities to support the developers. The school cultures and organizational structures were often rigid and reluctant to accept changes. Also the resources for developing (virtual) learning environments and applying new instructional technology were experienced as inadequate. In many cases teachers were forced to do the extra work without any reorganisation in the daily duties. Organizations were short of, for example, tutors, study material developers, and information technology specialists.

Technology was experienced to help teaching in at least two ways. First, it was seen as a practical tool that helps students to produce the demanded contents (texts, graphics etc). Second, it was seen as a communication tool and a manner of differentiating the content, context and reflective awareness. All organizations were in the beginning or in early phases of integrating the technology in teaching. Regarding the results, the use of technology was more like experimenting with the network to do things differently and making efforts to communicate and interact through the network. All interviewed teachers had a good vision of how, why and when to use technology. However, in most cases they thought those visions did not come true.

One obstacle in the process of developing new culture seemed to be the institution itself. In many cases the organizations seemed to be prisoners of the previous institutional culture. Hierarchical organizations could not be changed to offer alternative ways for development teams to work. There were only a few options for teachers to reorganise their work and duties. Those experiences were elaborated in myriad ways in the interviews.

Second obstacle seemed to be the inadequate infrastructure for students to study differently. In many cases the equipment (computers) and resources was not available anywhere else than in the school. The last, but not the least limitation was that teachers and students were not willing to use the new technology.

The interview showed clearly that there are lot of pressures for teachers and institutions to develop teaching by adopting technology as an integral part of learning

environments. However, the pressures accumulate historically in the situation in which instructional and learning theories have made major leaps even without technology being involved. Teachers have learned how to use teaching methods activating student learning. They have internalised the concept of context integration, started applying problem based learning (PBL), developed teaching models for enhancing students' more individual knowledge construction and so on. All this have to be transferred into new learning environments in which technology is the major participant. The theory and its instructional applications are yet to come. This may be one of the reasons for the teachers' unwillingness to take advances in applying modern educational media their own teaching.

Supporting the adoption of new learning and teaching culture

The data gathered showed that there seems to be several common features in the organisations adopting the new technology. We summarize those features with five conclusions.

First, it seems that organisations adopting new technology have already changed their instructional thinking from teaching students to helping them to learn. This kind of culture is characterized by such features as teachers appreciating individual goals and objectives and study processes.

Second, the organisations have developed explicit rules for negotiations aiming at the shared understanding of the optimal learning environment for the students. The process of developing the rules takes several things into account. The history and old strategies of the organisation are among those.

Third, the members should have appropriate skills for using the equipment and seeing its potential in teaching and instruction. Fourth, the organisation should have proper infrastructure and related resources for adopting and developing individual solutions for applying the technology in the organisation. The fifth requirement for diffusion of technology in educational organisations seems to be related with the availability of support personnel for experimenting with the technology in instruction. This may mean the need to hire computer specialists, tutors, and computer lab personnel. There is also a need for people who have access to internet and email from home and who are willing to offer help to students regardless of time or day.

In general all change processes seem to be tied with certain categories of administrative, organization level actions. Those are related with four types of processes and procedures. First one is managerial, second is related with leadership, third deals with involving people and fourth related with enabling

resources (skills, competences, facilities, equipment, etc.). The results indicated that the interviewed teachers were involved in changing their instructional practices and developing innovative ways for students studying. Teachers were eagerly participating and committed to the development projects. However, the institutional change process was out of the teachers' control. They seemed to have no control in managerial level actions, leading processes, or providing resources for the participants (enabling function). The category in which teachers functioned daily was involvement, i.e., involving themselves and others into processes of applying new technology in instructional practices.

The question we would like to propose for further studies is: should educational institutions develop their culture and ways of operating more towards those of global companies and the mindsets they seem to apply? In those companies change processes are enhanced by global policies with local practices. In at least some of those organizations distributed power among employees generates feelings of freedom both at the team and individual level. The process requires, however, responsibility and uninterrupted implementation of company goals and values at the daily practices. Yet, there are big differences between educational institutions and companies. One is the time perspective. In companies time perspective is more from present to future, whereas educational institutions seem to base their work more on the past and traditions. This difference may make educational institutions more conservative in respect to change and adopting innovations.

As a final conclusion we may say that the road to future is rocky, but promising. Teachers as key members of educational organisations are making true efforts to learn and change and results can already be seen in the new practices and applications. At the institutional level the change is sometimes painful, but there are no other options. The world becoming increasingly competitive, market driven, and oriented by global trends has given the information technology a specific gloria in leading us to the new millenium. Educational institutions are assumed to cover the road with a smoother pavement.

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